

IN THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double brackets indicating deletions.

Listing of the Claims:

1. (Currently Amended) A multi-threaded processor, comprising:
a processing pipeline including a number of stages, each stage processing at least one instruction, each instruction belonging to one of a plurality of threads; and
a fetch unit forming one of the stages of the pipeline and determining from which of the plurality of threads to fetch an instruction for processing by the processing pipeline, the fetch unit receiving information from at least one other stage of the processing pipeline and determining a processing time of the processing pipeline occupied by each of the plurality of threads based on the received information, the fetch unit determining from which of the plurality of threads to fetch an instruction for processing by the processing pipeline based on the determined processing time for each of the plurality of threads, wherein the fetch unit generates a weighted instruction count for each of the plurality of threads, the weighted instruction count for each of the plurality of threads is a count of the instructions for each of the plurality of threads with each instruction weighted by cycle counts associated with processing the instruction.
2. (Currently Amended) The processor of claim 1, wherein the fetch unit determines ~~the thread having the~~ a smallest determined processing time thread as the thread from the plurality of threads which to fetch an instruction for processing.
3. (Currently Amended) The processor of claim 1, wherein the received information includes ~~the~~ operation type of instructions in the processing pipeline.
4. (Original) The processor of claim 3, wherein the received information further includes the operation type of instructions leaving the processing pipeline.

5. (Currently Amended) The processor of claim 4, wherein the fetch unit includes a counter associated with each of the plurality of threads, each counter being incremented by a processing time associated with each instruction of the associated thread in the processing pipeline and being decremented by a processing time associated with each instruction of the associated thread leaving the processing pipeline.

6. (Currently Amended) The processor of claim 5, wherein the fetch unit determines ~~the~~ a thread associated with the counter having a smallest count value as the thread from which to fetch ~~an~~ the instruction for processing.

7. (Currently Amended) The processor of claim 1, wherein the ~~fetch unit~~ generates a generated weighted instruction count for each of the plurality of threads is generated as the determined processing time of each of the plurality of threads, and the weighted instruction count for a each of the plurality of threads is a count of the instructions for each of the plurality of threads in the processing pipeline ~~with each instruction weighted by the cycle counts associated with processing the instruction.~~

8. (Currently Amended) The processor of claim 7, wherein the fetch unit includes a counter associated with each of the plurality of threads, each counter being incremented by the cycle counts associated with each instruction of the associated thread in the processing pipeline and being decremented by the cycle counts associated with each instruction of the associated thread leaving the processing pipeline.

9. (Original) The processor of claim 8, wherein the fetch unit determines the thread associated with the counter having a smallest count value as the thread from which to fetch an instruction for processing.

10. (Original) The processor of claim 1, wherein the processing pipeline comprises:

an instruction decoder decoding instructions, which the fetch unit determines to fetch, to generate at least an operation type of the instruction as decoder information; and
a queue storing the decoded instructions and issuing decoded instructions to an execution unit for execution.

11. (Original) The processor of claim 10, wherein the received information is the decoder information and the issued decoded instructions.

12. (Original) The processor of claim 1, wherein the processing pipeline further comprises:

an instruction cache storing instructions, and outputting an instruction to the instruction decoder based on which instruction the fetch unit determines to fetch; and

an address renamer mapping a logical address generated by the instruction decoder for an instruction into a real address of a memory device in an execution unit.

13. (Currently Amended) A method of fetching instructions for processing in a multi-threaded processor, comprising:

receiving, at a fetch unit of a processing pipeline, information from at least one other stage of the processing pipeline, the processing pipeline including a number of stages, each stage processing at least one instruction, each instruction belonging to one of a plurality of threads;

first determining a processing time of the processing pipeline occupied by each of the plurality of threads based on the received information by generating a weighted instruction count for each of the plurality of threads as the determined processing time of each of the plurality of threads, the weighted instruction count for each of the plurality of threads is a count of the instructions for each of the plurality of threads with each instruction weighted by the cycle counts associated with processing the instruction; and

second determining from which of the plurality of threads to fetch an instruction for processing by the processing pipeline based on the determined processing time for each of the plurality of threads.

14. (Currently Amended) The method of claim 13, wherein the second determining step determines ~~the~~ a thread having the smallest determined processing time as the thread from which to fetch an instruction for processing.

15. (Currently Amended) The method of claim 13, wherein the received information includes ~~the~~ operation type of instructions in the processing pipeline.

16. (Previously Presented) The method of claim 15, wherein the received information further includes the operation type of instruction leaving the processing pipeline.

17. (Currently Amended) The method of claim 16, wherein the first determining step comprises:

incrementing, for each of the plurality of threads, a counter associated with each of the plurality of threads by a processing time associated with each instruction of the associated thread in the processing pipeline; and

decrementing, for each of the plurality of threads, the counter associated with each of the plurality of threads by a processing time associated with each instruction of the associated thread leaving the processing pipeline.

18. (Previously Presented) The method of claim 17, wherein the second determining step determines the thread associated with the counter having a smallest count value as the thread from which to fetch an instruction for processing.

19. (Currently Amended) The method of claim 13, wherein ~~the first determining step generates a~~ the generating weighted instruction count for each of the plurality of threads is generated as the determined processing time of each of the plurality of threads, the weighted instruction count for a each of the plurality of threads is a the count of the instructions for each of the plurality of threads in the processing pipeline ~~with each instruction weighted by the cycle counts associated with processing the instruction.~~

20. (Currently Amended) The method of claim 19, wherein the first determining step comprises:

incrementing, for each of the plurality of threads, a counter associated with ~~the~~ each of the plurality of threads by the cycle counts associated with each instruction of the associated thread in the processing pipeline; and

decrementing, for each of the plurality of threads, the counter associated with ~~the~~ each of the plurality of threads by the cycle counts associated with each instruction of the associated thread leaving the processing pipeline.

21. (Previously Presented) The method of claim 20, wherein the second determining step determines the thread associated with the counter having a smallest count value as the thread from which to fetch an instruction for processing.

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END OF CLAIM LISTING

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